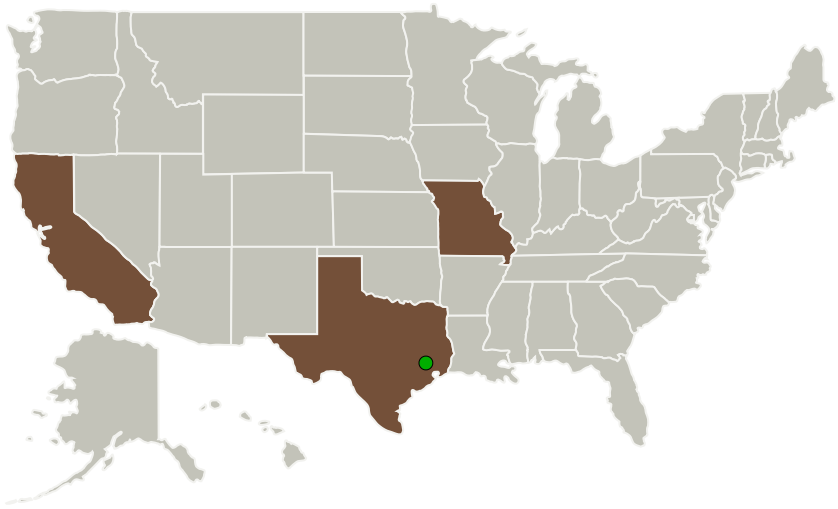
Advanced Li/CFx Primary Batteries with Non-Flammable Electrolytes, Phase I

Completed Technology Project (2010 - 2011)

Project Introduction

NASA seeks to develop high specific energy primary batteries that are safe and capable of performing under a wide temperature range, for manned space missions. To meet this goal, CFX Battery Inc. proposes to develop, characterize, and establish technological feasibility of a new Li/SF-CFx based high capacity lithium primary battery that offers higher rate capability and enhanced safety than conventional Li/CFx primary systems. In Phase I of the project, CFX Battery will develop the sub-fluorinated CFx cathode materials that offer high capacity (>700 mAh/g) and rate capability. In addition, novel non-flammable electrolytes that are highly conductive and electrochemically stable at a wide temperature range will be developed to increase the safety of the Li/SF-CFx system. The technological feasibility of the sub-fluorinated CFx cathode and non-flammable electrolyte combination will be demonstrated using small coin and pouch cells. Phase II of the project will implement the developed technology in large cell formats and perform any refinement and optimization that will be needed to bring the technology to a commercially usable stage.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
CFX Battery, Inc.	Lead Organization	Industry	Azusa, California
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas
Missouri University of Science and Technology	Supporting Organization	Academia	Rolla, Missouri

Primary U.S. Work Locations	
California	Missouri
Texas	

Project Transitions

January 2010: Project Start

January 2011: Closed out

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

CFX Battery, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

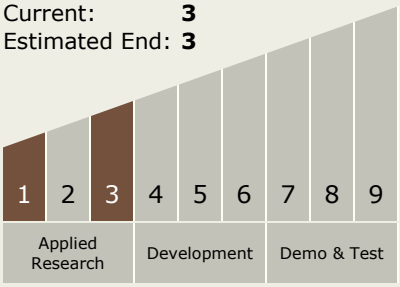
Carlos Torrez

Principal Investigator:

Arunkumar Tiruvannamalai

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System